

DESCRIPTIONS OF FIVE NEW MAMMALS FROM
PANAMA

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Additional determinations of mammals obtained by the writer, while assigned to the Smithsonian Biological Survey of the Panama Canal Zone, reveal five hitherto unrecognized forms which are described below.

For the loan of types and other material for comparison I am indebted to Dr. J. A. Allen of the American Museum of Natural History, New York City, and to Mr. Samuel Henshaw of the Museum of Comparative Zoology, Cambridge, Massachusetts.

CHIRONECTES PANAMENSIS, new species

Type from Cana (altitude 2,000 feet), eastern Panama. No. 179164, skin and skull, male, old adult, U. S. National Museum (Biological Survey Collection); collected by E. A. Goldman, March 23, 1912. Original number 21562.

General characters.—Similar to *C. minimus* of Guiana in size and color, but differing in cranial details, especially the longer braincase and much longer, evenly tapering, and posteriorly pointed nasals.

Color.—Color pattern about as in *C. minimus*, but light facial areas apparently less distinct; dark brown or black of forearms extending down over the thinly haired first phalanges of three median digits, the terminal phalanges white or light flesh color as in *minimus*; hairy base of tail dark all round.

Skull.—Similar to that of *C. minimus*, but braincase more elongated, the well-developed lambdoid crest projecting posteriorly over foramen magnum; nasals longer, encroaching farther on frontal platform, the ends pointed instead of truncate, and the sides not constricted near middle; ascending branches of premaxillae reaching farther posteriorly along sides of nasals; fronto-parietal suture convex posteriorly; inner sides of parietals longer; sagittal crest well developed.

Measurements.—Type: Total length, 651 mm.; tail vertebrae, 386; hind foot, 72. *Skull* (type): Greatest length, 74.2; condylo-basal length, 72.3; zygomatic breadth, 43.8; length of nasals, 33;

greatest breadth of nasals, 11; interorbital breadth, 14.1; postorbital breadth, 8.5; palatal length, 45.6; upper molariform tooth row, 26.4; upper premolar series, 11.6.

Remarks.—While the water opossum of Middle America and Colombia is very similar in size and color to *C. minimus* of north-eastern South America it differs in numerous cranial details from that animal as figured by Burmeister.¹ The nasals are conspicuously longer and very different in form. The sagittal crest develops in both sexes early in life. In a specimen from Rio Frio, Cauca River, Colombia, the tail is black to the tip.

Specimens examined.—Total number, 11, as follows:

Panama: Cana (type), 1.

Costa Rica: San Jose, 1; exact localities unknown, 3.

Nicaragua: Matagalpa, 1.

Colombia: Bagado, 1; Barbacoas, 1; Guanchito, 1; Porto Frio, Cauca River, 1; Palmira, 1.

LONCHOPHYLLA CONCAVA, new species

Type from Cana (altitude 2,000 feet), eastern Panama. No. 179621, skin and skull, male adult, U. S. National Museum (Biological Survey Collection), collected by E. A. Goldman, May 20, 1912. Original number 21701.

General characters.—Similar in size to *L. mordax*, but color darker; cranial and dental characters different, the second upper premolar notably narrower, and in the reduced development of the internal lobe more like that of the much larger species, *L. hesperia*.

Color.—About as in *Glossophaga soricina*; general color of upper parts near warm sepia (Ridgway, Color Standards and Nomenclature, 1912), the under parts and basal color of fur of upper parts somewhat paler.

Skull.—Broader and more massive than that of *L. mordax*, the braincase larger and more fully inflated; interpterygoid fossa broader; coronoid process lower, the upper outline more broadly rounded; angle of mandible longer; incisors slightly larger; second upper premolar much less extended transversely owing to reduction in size of inner lobe; molar crowns more quadrate, less triangular in outline. Compared with that of *L. hesperia* the skull is much smaller and relatively shorter and broader, the braincase relatively larger but flatter above; coronoid process with less broadly rounded

¹ Fauna Brasiliens, pp. 72-73, pl. 11, figs 3-4, 1856.

upper outline; dentition similar, but relatively heavier, the premolar series less widely spaced; third upper molar nearly as large as second (decidedly smaller in *hesperia*).

Measurements.—Type (measured in flesh): Total length, 68 mm.; tail vertebrae, 10; tibia, 12.7; hind foot, 11; forearm, 33.9. *Skull* (type): Greatest length, 23.4; condylobasal length, 22.4; interorbital breadth, 4.6; breadth of braincase, 9.3; mastoid breadth, 9.8; depth of braincase at middle, 6.9; palatal length, 12.3; length of mandible, 16.8; maxillary tooth row, 8.

Remarks.—In the general form of the skull this species is in all essential respects like *L. mordax* and *L. robusta* and unlike *L. hesperia* in which the skull is relatively much narrower and more elongated. The narrowness and *Chaeronycteris*-like appearance of the skull of *L. hesperia* has been pointed out by Mr. Gerrit S. Miller, Jr.¹ The greater relative as well as actual length of the rostrum in *hesperia* leaves the third upper molar implanted well in front of the maxillary processes of the zygoma as in the genus *Chaeronycteris* instead of in the same horizontal plane with these processes as in *mordax* and *robusta*. In the narrowness of the second upper premolar, however, *L. concava* approaches *hesperia*, the conspicuous inner lobe present in *mordax* and *robusta* being reduced to a slight swelling bearing a small cusp. The coronoid process in *concava* is somewhat intermediate in shape between the high angular form seen in *mordax* and the low, broadly rounded upper outline of *hesperia*.

A small bat, *Lionycteris spurrelli*, from northwestern Colombia, has recently been described by Mr. Oldfield Thomas and made the type of a new genus characterized by the narrowness of the upper premolars. *L. concava* may possibly require comparison with the Colombian species which is based on an immature individual. But, allowing for immaturity, the cranial dimensions given are so different (greatest length, 18.7 in *spurrelli*, 23.4 in *concava*) that the specific identity of the two seems very improbable.

Specimens examined.—One, the type.

LUTRA REPANDA, new species

Type from Cana (altitude 2,000 feet), eastern Panama. No. 179974, skin and skull, male adult, U. S. National Museum (Biological Survey Collection), collected by E. A. Goldman, May 30, 1912. Original number 21758.

¹ Proc. U. S. Nat. Mus., vol. 42, No. 1882, p. 24, March 6, 1912.

General characters.—A small form with low, flat skull closely allied to *L. colombiana*, but differing in dental and slight cranial characters, especially the lesser transverse extent of the large upper molariform teeth. Differing from *L. latidens* in much smaller size as well as cranial details.

Color.—Entire upper parts warm sepia or mars brown (Ridgway, 1912); under parts grayish brown, palest on throat, pectoral and inguinal regions; lips and inner sides of forelegs soiled whitish.

Skull.—Similar in size to that of *L. colombiana*; rostrum and interorbital space narrower; lachrymal eminence more prominent, projecting as a distant process on anterior border of orbit; jugal less extended vertically but bearing a postorbital process as in *colombiana*; palate reaching farther posteriorly beyond molars; upper carnassial narrower, with inner lobe less produced posteriorly, leaving a gap which is absent in *colombiana*; upper molar narrower, the postero-external cusp set inward, giving the crown a less evenly rectangular outline. Contrasted with that of *L. latidens* the skull is very much smaller, with flatter frontal region.

Measurements.—Type: Total length, 1085 mm.; tail vertebrae, 500; hind foot, 119. An adult female from Gatun, Canal Zone: 1095; 463; 111. *Skull* (type): Condylbasal length, 109.1; zygomatic breadth, 72; interorbital breadth, 23.1; postorbital breadth, 16.8; mastoid breadth, 69.9; palatal length, 49.8; maxillary tooth row, 36.1; alveolar length of upper carnassial, 12.4; alveolar breadth of upper carnassial, 10.

Remarks.—The otter of Panama, like other Middle American forms of *Lutra*, has the nose pad haired to near the upper border of the nostrils; the soles of the feet are entirely naked; the tufts of hair under the toes and the granular tubercles present on the soles of the hind feet in *L. canadensis* are absent. The frontal region is flatter in skulls of *L. repanda* than in the skull of the type of *L. colombiana*, but the more swollen condition of the latter may be due to the presence of the parasites that frequent the frontal sinuses in *Mustelidae*.

Specimens examined.—Two, from localities as follows:

Panama: Cana (type), 1.

Canal Zone: Gatun, 1.

FELIS PIRRENSIS, new species

Type from Cana (altitude 2,000 feet), eastern Panama, No. 179162, skin and skull, female adult, U. S. National Museum (Biological Survey Collection); collected by E. A. Goldman, March 22, 1912. Original number 21559.

General characters.—A large, long-tailed tiger-cat, probably a member of the *F. pardinoides* group. Pelage rather long and soft; fur of nape not reversed; skull large with narrowly spreading zygomatica and fully inflated audital bullae.

Color.—Ground color of upper parts ochraceous tawny (Ridgway, 1912), nearly uniform from nape to base of tail, but becoming somewhat paler on head and paling through cinnamon buff to pinkish buff along lower part of sides; general upper surface heavily lined and spotted with black, the spots on sides more or less completely encircling tawny areas, or forming rosettes; back of neck with a narrow median black line and two broader parallel lines, one on each side; shoulders marked by heavy diagonal stripes extending from near a rounded solid black median spot downward and forward on each side; posterior part of back with two narrow central lines extending to near base of tail; under parts white, heavily spotted with black across abdomen, and with black bars, one across throat and one across neck; outer sides of forearms and hind legs cinnamon buffy, spotted with black; feet buffy grayish interrupted by small black markings; ears deep black, with white submarginal spots and buffy edges; tail with about 12 broad, irregular, but nearly complete black rings, the narrow interspaces buffy above and white below.

Skull.—Large and rather elongated, the vault of braincase highest near fronto-parietal suture; frontal region broad; zygomatica slightly spreading posteriorly, the squamosal arms not strongly bowed outward; palate narrow; audital bullae large and much inflated anteriorly.

Measurements.—Type: Total length, 963 mm.; tail vertebrae, 440; hind foot, 131.5. *Skull* (type): Greatest length, 99.6; condylobasal length, 95.6; zygomatic breadth, 62.8; interorbital breadth, 18.5; length of nasals (median line), 17.6; greatest breadth of nasals, 13; intertemporal breadth of braincase, 34; breadth between tips of post-orbital processes, 51.5; length of palate, 38.5; length of upper incisive tooth row, 12.2; alveolar length (outer side) of upper carnassial, 11.6.

Remarks.—This tiger cat is provisionally referred to the little known *F. pardinoides* group. In size it seems nearer to the *F. wiedii* group, but it lacks the reversed pelage of nape commonly ascribed to that group. Moreover, the skull is more elongated than in the available Mexican and Brazilian specimens used for comparison and assumed to represent the *F. wiedii* group. It may be similar

to *F. pardinoides oncilla* Thomas, from Volcan de Irazu, Costa Rica, but the type of the latter without skull is described as a much smaller animal with clay colored under parts. No comparison with the forms of *Felis pajeros* seems necessary.

Specimens examined.—One, the type.

AOTUS ZONALIS, new species

Type from Gatun (altitude 100 feet), Canal Zone, Panama, No. 171231, skin and skull, female adult, U. S. National Museum (Biological Survey Collection); collected by E. A. Goldman, April 29, 1911. Original number 21101.

General characters.—Resembling *A. griseimembra*, but general color more buffy, less grayish; skull broader and differing in numerous details; dentition heavier.

Color.—General shade of upper parts, limbs and upper base of tail near wood brown (Ridgway, 1912) with a buffy suffusion, this color more or less heavily overlaid with russet and black along median line of back; head marked with narrow black lateral lines converging to a point on back of neck, and a black median frontal line extending from between eyes to crown; white spots above and below eyes; sides of neck grayish in some specimens; under parts light ochraceous-buff; feet blackish; proximal third of under side of tail usually stained with chestnut, the distal two-thirds black all round.

Skull.—Similar in general size to that of *A. griseimembra*, but broader, the greater breadth most noticeable in the braincase; interorbital region more depressed, materially altering the facial angle; frontals less extended posteriorly between parietals; parietals joined by a longer suture owing to lesser posterior development of frontals; supraoccipital reaching farther upward in a wedge-shaped extension between parietals; zygomatic portion of jugal heavier; audital bullae less inflated in front of meatus; mandible broader and heavier, the angle more everted; molariform teeth heavier.

Measurements.—Type: Total length, 683 mm.; tail vertebrae, 400; hind foot, 90. Average of two adult female topotypes: 637 (620-654); 357 (325-390); 85.5 (83-88). An adult male from Boca de Cupe: 670; 360; 90. *Skull* (type): Greatest length, 60.9; condylobasal length, 47.2; zygomatic breadth, 37.5; breadth between outer sides of orbits, 43.3; postorbital breadth, 31.5; mastoid breadth, 33.8; interorbital breadth, 5.2; palatal length, 17.5; maxillary tooth row, 18.3.

Remarks.—This species, the only known nocturnal monkey of Panama, closely resembles *A. griseimembra* of the Santa Marta region of Colombia in external appearance, the principal difference being a more general buffy suffusion of the body and limbs. The skull, however, differs in many important respects and the larger molariform teeth of the Panama animal would alone serve as a distinguishing character.

Specimens examined.—Total number, 10, from localities as follows:

Canal Zone: Gatun (type locality), 4.

Panama: Cana, 3; Boca de Cupe, 3.